

WHAT IS CLAIMED:

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5 1. A packet-based voice communication device in a mobile communication system having a layered protocol architecture, comprising:

a W-PVCP (Wireless Packet Voice Convergence Protocol) layer for mapping a voice packet of variable length generated due to activation of voice traffic onto a packet frame of a fixed length; and

a MAC (Medium Access Control) layer and a physical layer for transmitting the mapped packet frame to a station on a channel.

10 2. The device of claim 1, wherein said W-PVCP layer is interconnected with a packet voice protocol over a wire network through an upper PPP (Point-to-Point Protocol) layer.

15 3. The device of claim 1, wherein said MAC layer operates in an active state and a control hold state.

4. The device of claim 1, wherein said physical layer operates in a normal state and a sleep state.

20 5. The device of claim 1, wherein said voice packet of a variable length includes:

a header area which has a section ID field indicating a logical channel number, a field indicating a first message, a frame sequence number field, a time stamp field indicating a voice packet generating time, a field indicating low priority blocks, and a noise field for generating noise in a mute period at a receiving side;

a length area representing the length of voice information;

a CRC (Cyclic Redundancy Code)/FEC (Forward Error Control) area for error correction of the header area;

a voice information area for low priority blocks that are dropped when errors occur; and

5 a non-droppable voice information area.

6. The device of claim 1, wherein said packet frame includes:

a subframe sequence area representing the sequence of the packet frame;

an information area for storing a divided voice packet;

10 a CRC area for error correction of the packet frame; and

a tail area indicating the termination of the packet frame.

7. The device of claim 6, wherein said CRC and tail areas are used by the physical layer.

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8. The device of claim 1, further comprising timers in the MAC layer for state transition thresholds, wherein said timers are set according to an utterance period and a mute period of the voice traffic.

20 9. A packet-based voice communication device in a mobile communication system having protocol architecture comprising:

a physical layer and a MAC (Medium Access Control) layer for transmitting a voice packet received on a channel to a W-PVCP (Wireless Packet Voice Convergence Protocol) layer;

25 wherein said W-PVCP layer calculates a synchronization delay by utilizing a time stamp included in a first voice packet received from said MAC layer, buffers the subsequent voice packets for a predetermined time period based on the

synchronization delay, and transmits the buffered voice packets to a packet voice application.

10. The device of claim 9, wherein said W-PVCP layer detects a lost
5 packet from sequence numbers of the voice packets received from the MAC layer and transmits a dummy slot instead of the lost packet to said packet voice application.

11. The device of claim 9, wherein said W-PVCP layer detects an
10 arrival delay of the voice packet caused by a process delay in the physical layer or MAC layer and transmits a dummy slot for the time delay to the packet voice application.

12. A packet-based voice communication method in a mobile
15 communication system, comprising the steps of:

assigning a packet voice channel upon generation of voice data, entering an active state, and transmitting packetized voice data on said packet voice channel;

releasing the assigned packet voice channel when there is no voice data to
be transmitted for a predetermined time period, and entering an inactive state; and
20 re-entering the packet voice channel active state from the inactive state when a packet voice channel is assigned to transmit newly generated voice data.

13. The method of claim 12, wherein said packet voice channel is assigned by a 5ms control message of a MAC (Medium Access Control) layer.

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Sub 14. A packet-based voice communication method in a mobile communication system having a layered protocol architecture, comprising the steps

of:

converting voice data generated by a packet voice application to packet data of a variable length upon activation of voice traffic;

mapping said packet data of a variable length to at least one packet frame of a fixed length by a W-PVCP (Wireless Packet Voice Convergence Protocol) layer;

passing said mapped packet frame to a MAC (Medium Access Control) layer; and

transmitting the mapped packet frame on a channel by a physical layer.

15. The method of claim 14, wherein said W-PVCP layer maps the packet voice data received over a wire network to said packet frame of a fixed length through an upper PPP layer.

16. The method of claim 14, wherein said MAC layer operates in an active state and a control hold state.

17. The method of claim 14, wherein said physical layer operates in a normal state and a sleep state.

18. A packet-based voice communication method in a mobile communication system having a layered protocol architecture, comprising the steps of:

passing a voice packet received on a channel to a W-PVCP (Wireless Packet Voice Convergence Protocol) layer by a MAC (Medium Access Control) layer;

calculating a synchronization delay by referring to a time stamp included in a first voice packet received from said MAC layer, buffering the following voice packets for a predetermined time period based on the synchronization delay, and

transmitting the buffered voice packets to a packet voice application by the W-PVCP layer.

19. The method of claim 18, wherein said W-PVCP layer detects a lost
5 packet from the sequence numbers of the voice packets received from said MAC layer and transmits a dummy slot in place of the lost packet to the packet voice application.

20. The method of claim 18, wherein said W-PVCP layer detects an
10 arrival delay of the voice packet caused by a process delay in a physical layer or said MAC layer and transmits a dummy slot for the time delay to the packet voice application.